

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 878. (No. 43, Vol. XVII.)

OCTOBER 22, 1925

Weekly, Price 6d.
Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free:
United Kingdom ... 30s. 4d. Abroad ... 33s. 0d.*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates.

* Foreign subscriptions must be remitted in British currency.

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925	
Oct. 24	Schneider Cup Race, Baltimore, U.S.A.
Oct. 24-27	Eliminating Trials for Coppa del Mare, Naples.
Oct. 27	Dr. A. P. Thurston, D.Sc., M.B.E. Report on International Aircraft Navigation Congress at Brussels, before Inst.Ae.E.
Oct. 28	Coppa del Mare, Naples.
Oct. 29	Mr. W. L. Cowley. "Aircraft Transport Economy," before R.Ae.S.
Nov. 4	Group-Capt. W. F. MacNeece. "The General Principles of Air Defence," before Royal United Service Institution.
Nov. 10	Wing-Com. T. R. Cave-Browne-Cave, C.B.E., F.R.Ae.S. "The Evaporative Cooling of Aero Engines and Condensation of their Exhaust Gas," before R.Ae.S.
Nov. 10	Mr. M. L. Bramson, A.C.G.I. "Practical Flying," before Inst.Ae.E.
Nov. 11-14	Eliminating Trials for Coppa d'Italia, Rome.
Nov. 12	Mr. H. B. Howard, A.F.R.Ae.S. "Some Problems in Aeroplane Structural Design," before R.Ae.S.
Nov. 15	Coppa d'Italia, Rome.

EDITORIAL COMMENT.



THE subject which has occupied the main attention of British aeronautical circles during the past week is not unnaturally the Cierva "Autogiro," which represents such a radical departure from usual practice. It is seldom that a new invention, presenting such innovations as those upon which the design of this machine is based, is entirely successful at its first demonstration, but such may be said to have been the case with the "Autogiro." At any rate as regards its first public demonstration in Great Britain. It is true, of course, that countless experiments had previously been made by Senor de la Cierva, and that he has not arrived at the machine in its present state until after the usual series of disappointments and failures. That he has now overcome at any rate the main obstacles is not to be doubted, and although it would be futile to pretend that this machine has reached anything approaching finality, the main problems can be said to have been solved. In connection with the demonstrations last week, we think the greatest credit is due to the new Director of Scientific Research, Major H. E. Wimperis, who was responsible for inviting Senor de la Cierva to send his machine to Farnborough to be thoroughly tested out. Whatever the ultimate future of the "Autogiro," the principle involved is of such great scientific interest that further development seems extremely well worth while, and we trust that those in charge of the purse-strings at the Air Ministry may be convinced of the necessity of having two or three machines built, in order thoroughly to test out the principle and to discover any snags that may be present, and which may hitherto have remained hidden.

The question which naturally arises is what are the applications of the "Autogiro" principle. The machine is in no sense a helicopter, although as regards its cruising at low speed and descending almost vertically, it would appear to approach sufficiently close to the helicopter for most practical purposes. At present the machine appears to require

rather a long run in taking off, approximately the same as that of a normal aeroplane, but there seems to be every reason to believe that by providing means for giving the windmill an initial start before the machine commences to take off, the length of run required can be very materially reduced. At present this initial starting of the windmill is attained by the rather crude method of winding a cable around four wooden blocks on the wings, a number of men then running the cable out as rapidly as possible. There seems to be no reason why, in later machines, this should not be done by means of a small starting engine, or by the main engine *via* a suitable clutch mechanism. If the rotating wings are first brought up to the speed corresponding to a lift approximately equivalent to the weight of the machine, it would seem that the run required to take off need be a very short one only.

If the "Autogiro" is of to be practical value for military purposes, it would appear to be desirable that it should be capable of a reasonably high top speed, although if used in the manner contemplated for the helicopter, if and when that type materialises, the "Autogiro" would presumably have aeroplanes of normal type to defend it against air attack. If the principle is to be applied successfully to commercial machines, a reasonably high top speed is, perhaps, even more essential, and furthermore, the question of economy will naturally assume considerable importance. At present, it is difficult to express an opinion on this latter point. In the experimental machine demonstrated at Farnborough the climb could not be described as spectacular, but then it should be remembered that this machine is considerably heavier than the standard Avro, while the le Rhone engine somewhat naturally objected to running at full power at a forward speed of twenty m.p.h. or so, and was

not, therefore, developing as much power as it should have done.

Turning to the question of forward speed, in the machine demonstrated at Farnborough, the windmill rotates at about 140 r.p.m. As the span is 36 feet, this is equivalent to a tip speed of 264 feet per second, or approximately, 180 m.p.h. Assuming the forward speed of the machine to be 60 m.p.h., the ratio of tip speed to forward speed is three to one. Presumably, this ratio has been found by experience to be the most suitable, probably because of the beating or flapping of the wings. If, therefore, this ratio has to be retained in a machine travelling at, for instance, 200 m.p.h., it will mean a tip speed of 600 m.p.h. The question of diameter, or in other words, of lifting surface, will naturally be of importance, and presumably for a fast machine one would have a small diameter windmill revolving at high speed. Quite possibly, it might be found that for very fast machines the blades of the windmill could be built of Duralumin after the style of the Fairey-Reed propeller.

As regards manœuvrability, very little is known at present, and it might be expected that a violent manœuvre might momentarily cause the wings to beat to an undesirable extent, since their gyroscopic effect would naturally give them a tendency to remain in their normal plane when the machine was suddenly tilted out of that plane. A number of other problems readily come to mind, but doubtless Senor de la Cierva will be prepared to explain any obscure points in the paper which he is reading tonight before the Royal Aeronautical Society. At any rate, as we have already said, the "Autogiro" appears to be so promising as to make further experiment well worth while. It would seem that the principle could be tested out very cheaply with machines of the light 'plane type.

Kurdistan Honours

THE King has approved of the following rewards in recognition of valuable and distinguished service rendered in connection with operations in Kurdistan in May, 1924 :—

Military Cross.—Flying Officer G. A. Elliott, No. 6 Armd. Car Coy., R.A.F.; Obsr. Offr. L. T. Kerry, No. 6 Armd. Car Coy., R.A.F.

The King has approved of the award of the Military Medal to the following for bravery in the field in connection with operations in Kurdistan in May, 1924 :—

351286 Cpl. G. H. Lewis, No. 6 Armd. Car Coy., R.A.F.; 238748 Cpl. (A-Sgt.) T. Ashcroft, No. 6 Armd. Car Coy., R.A.F.

Following the Schneider Cup Race

THE Royal Aero Club informs us that arrangements have been made for a special "flash" service by the Reuter Agency on the occasion of the Schneider Cup Race, next Saturday, by which Reuter's will telephone to the Club not only the result of the race, but items of interest during the race itself, so that members of the R.Ae.C. should be able to follow quite closely the progress of the various competitors. Doubtless a large number of members will arrange to be present at the Club on Saturday evening (the race starts at 2.30 American time, which is equivalent to 7.30 p.m. British time), but we understand that members unable to be present will, in so far as the telephone capacity permits, be able to obtain information by ringing up the Club, whose telephone number is Regent 1327.

Commander Perrin's Accident.

IT is with regret that we learn that the Secretary of the Royal Aero Club, Commander H. E. Perrin, met with an accident on Sunday last, while playing golf. Commander Perrin slipped on the grass, and in falling broke his arm in two places. For a time it was not possible to ascertain the extent of the damage, and it was not until the arm was X-rayed on the following day that the two fractures were discovered, Commander Perrin being in great pain in the

meantime. The arm has now been set, but it will, of course, be necessary to keep it in bandages for a month or so. His many friends will wish Commander Perrin a speedy recovery.

Sir Samuel Hoare Busy

SIR SAMUEL HOARE, Secretary of State for Air, has been very busy the last few days, having started his lecture campaign in connection with the Air Defence Scheme. On October 16 he made his first speech at Lincoln, and on October 20, after presiding at a lecture given by Mr. Alan Cobham, he spoke at Norwich. Owing to pressure on our space this week we are compelled to hold over further reports on this subject until our next issue.

Tokyo-Rome Flight Starts

HAVING installed a new Lorraine-Dietrich engine in his Savoia S-16ter flying boat, the Marquis de Pinedo started on his return flight from Tokyo to Rome on October 17. Leaving Kasumigacua air station at 9.40 a.m., he reached Kagoshima at 7.30 p.m., having landed en route at Kushimoto. He arrived at Shanghai on October 18, and the following day he flew to Amoy and thence to Hong Kong.

Sadi Lecointe Wins Beaumont Cup

THE speed contest for the Beaumont Cup, which was flown at Istres on October 18, was won by Sadi Lecointe, who covered the 300 km. course in 57 mins. 36 sec., or at a speed of 312.5 k.p.h. (193.75 m.p.h.). His rival was the pilot, Lieut. Férigoule.

Japanese Aviators Leave England

MAJ. ABE and Mr. Kawachi, the Japanese aviators who reached England from Tokyo last week, continued the final portion of their long journey on October 19, when they left Croydon (having flown there from Farnborough a few days previously) en route for Brussels and Rome. A squadron of seven R.A.F. machines accompanied them to the coast, and later it was reported that they had arrived at Brussels aerodrome. The next day they handed to the Minister of Foreign Affairs a gift to King Albert, in the form of a panel of embroidered silk.

A NEW TYPE OF FLYING MACHINE

The Cierva "Autogiro" Demonstrated at Farnborough

ALTHOUGH it cannot be regarded as an entirely new machine, a description and illustration of it having been published in *FLIGHT* more than two years ago, the de la Cierva "Autogiro" which was demonstrated over Laffan's Plain on Monday of this week, October 19, incorporates some principles not hitherto applied to flying machines. Reports of flights with this machine have reached this country from Spain from time to time, but it is one thing reading rather vague reports of flights with a new type, and quite a different thing actually to witness such flights. It was therefore with a good deal of eagerness that one proceeded to Farnborough on Monday to see Capt. Frank Courtney fly the "Autogiro" at the Royal Aircraft Establishment. In order to make sure of arriving in good time we took an earlier train than that which had been described by the Air Ministry as "suitable," and arrived at Farnborough shortly after 10 a.m. Knowing his apparently inexhaustible energy, one was not in the least surprised to discover that the Director of Civil Aviation, Air Vice-Marshal Sir W. Sefton Brancker, had also decided upon an early start, and the small party was soon within the sacred precincts of the R.A.E., where a visitors' book was duly signed, credentials presented and other small formalities seen to.

It was discovered that the "Autogiro" was out in the middle of the aerodrome, and what was worse, was being towed slowly but with maddening persistency farther and farther away in the general direction of Laffan's Plain. One waited

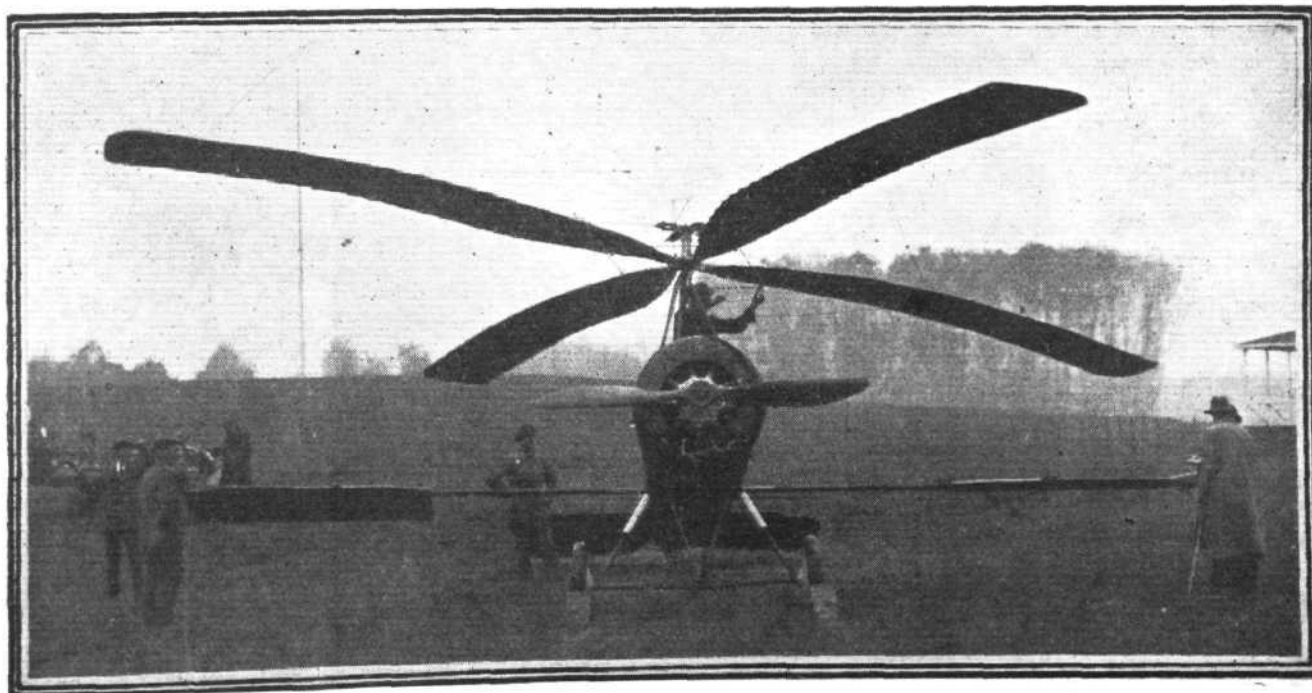
for Sir Sefton to give a hint as to what was the proper procedure under the circumstances, and had a few momentary, although as it proved, futile, visions of a conveyance heading Laffanwards. But the D. of C.A. scorned such modern aids to locomotion and set off hot-foot (at first) in pursuit of four curious flapping wings discernible in the dim distance. The small party had not gone far before experiencing how abominably wet the grass on Laffan's Plain can be, and the guess was ventured that this was a special kind of R.A.E. experimental grass, specially produced to dissuade curious onlookers from trespassing on the sacred ground over which all our hush-hush machines make their first secret flights. On this occasion there was only a large single-engined biplane fitted with a Rolls-Royce air-cooled "Vulture" engine, and Leitner-Watts all-wood propeller on the ground, and as the engine was idling over, it was suggested that this was done to prevent visitors from seeing the secret propeller.

Finally, the "Autogiro" came to a standstill opposite the pavilion on the Plain, and our party slowly approached it, all blessing the very wet wetness of the grass in hearty undertones. All except Sir Sefton Brancker that is. The Director of Civil Aviation looked as if he always walked three miles in wet grass after breakfast, and if his indifference was not genuine it was splendidly simulated.

On reaching the "Autogiro" a detailed inspection was at once commenced, and owing to the utter simplicity of the mechanism, it did not take long to master the details, as far



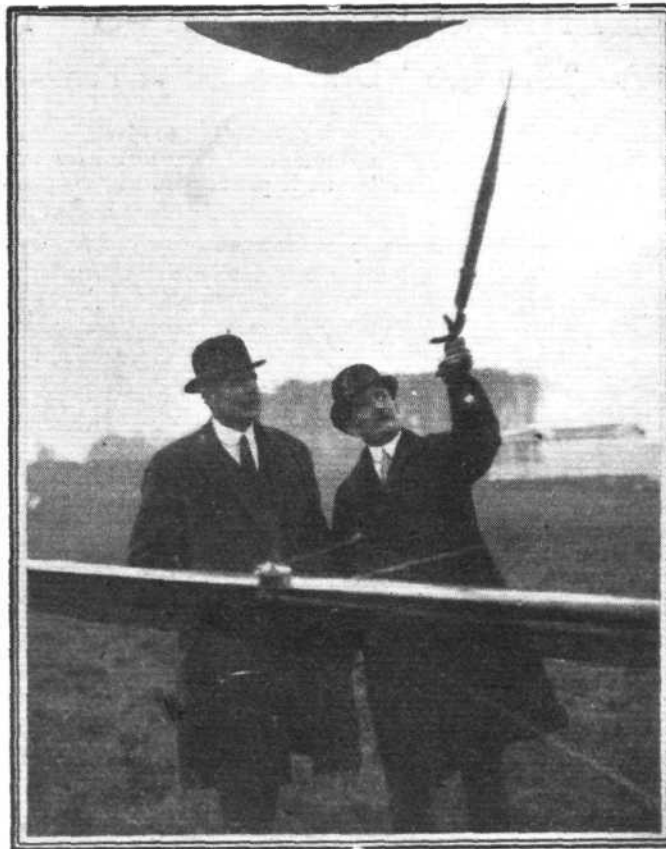
THE CIERVA "AUTOGIRO": This photograph shows Capt. Frank Courtney, the pilot of the machine, and Senor de la Cierva, its designer.



THE CIERVA "AUTOGIRO": Front view. A mechanic may be seen winding the starting cable around its supports on the wings.

as the working gear was concerned. The "Autogiro" portion of the machine consisted of four wings, single-spar affairs, pivoted around horizontal hinges to a steel tube pillar rising from the fuselage. Near the top of this pillar were substantial shackles holding short lengths of rubber cord, which prevented the wings from drooping below a certain level. Just below the shackles were a couple of ball thrust bearings and that seemed to be about all. The rest of the curious bird was an Avro 504K fuselage with normal tail, a le Rhone rotary engine, and a more or less normal Avro undercarriage. Apparently in order to avoid a too violent departure from normal, a couple of spars projected laterally from the fuselage, each carrying a fairly large aileron. It was later learned that these served mainly to cheer up the pilot and were in no way necessary. Almost as soon as the inspection of the machine was completed, Mr. Courtney and Senor de la Cierva arrived, and one was able to ask questions concerning such points as were less obvious from an examination of the machine. Thus it was ascertained that the overall span of the "Autogiro" is in the neighbourhood of 36 ft., while the mean chord of the wings is 2 ft. 7 in., and the area of each wing approximately 40 sq. ft. (a total of 160 sq. ft. in all). At full speed the windmill lifting surfaces revolve at something like 140 r.p.m., or about 2.3 revs. per second. At first this speed appears to be very low, until a rapid estimate indicates that it actually means a tip speed of about 260 ft. per second, or 180 miles per hour. That having been realised, one begins to understand whence the "Autogiro" obtains its lift.

Although the official demonstration flight was timed to take place at 12 o'clock, Mr. Courtney decided to make a



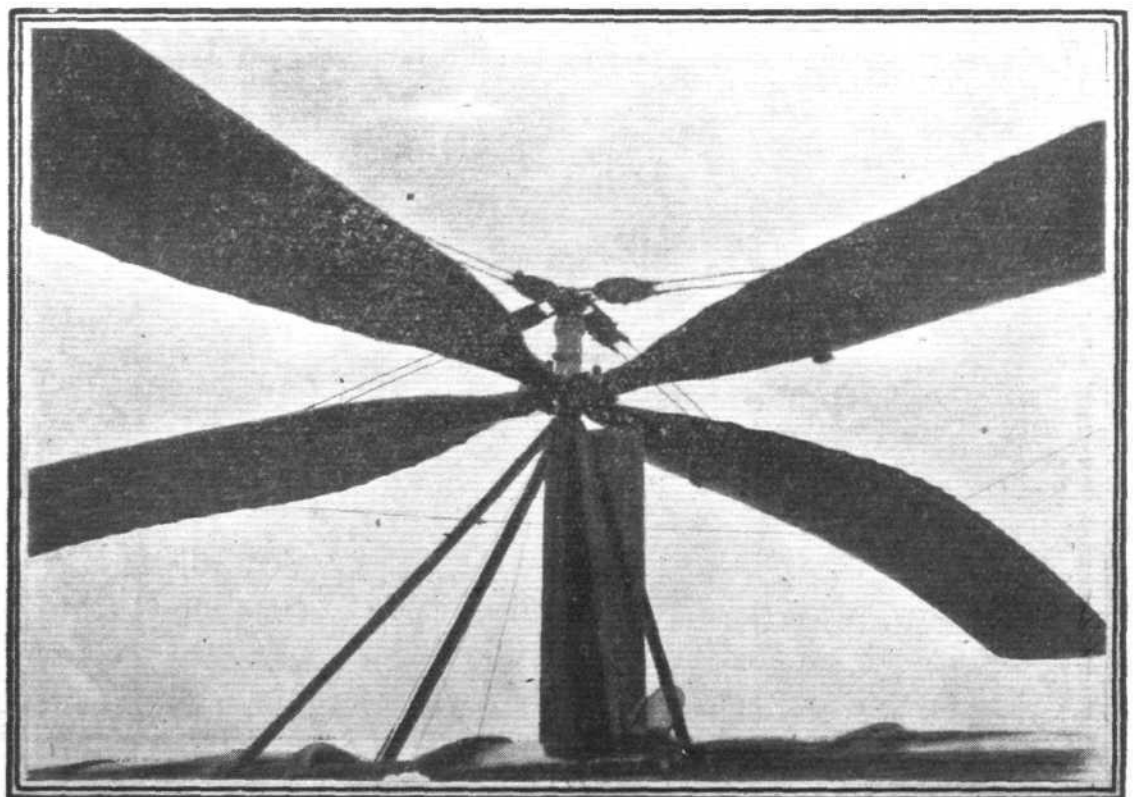
THE "AUTOGIRO": Air Vice-Marshal Sir Geoffrey Salmond explaining the principle upon which the machine works to Air Chief Marshal Sir Hugh Trenchard.

trial flight, and the two Spanish mechanics consequently commenced to "wind up" the windmill. This process is necessary at present in order to reduce the length of run required for the machine to take off. As soon as the whole of the cable had been wound off the wood blocks on the wings, Courtney opened out his engine and the machine commenced to taxi. It was noticed that after running some distance along the ground the wings commenced to rise at a relatively pronounced angle, this evidently being caused by the action of the lift on the wings before they had reached sufficient speed for centrifugal force to bring them back to the horizontal.

As the machine ran along the ground the windmill gathered speed, and after a run of approximately the normal required by the standard Avro, the "Autogiro" rose slowly into the air. Courtney made several turns to right and left, showing that the machine was under perfect control, and finally he came in and landed. Approaching the aerodrome at what appeared a fairly normal angle, he carried on until about 50 or 60 ft. up, when he pulled back the stick. The tail of the machine dropped, and a descent was commenced which seemed to be very nearly vertical. Actually we believe the horizontal

speed at the time was between 10 and 15 m.p.h. The machine touched the ground, ran a distance of rather less than its own length, and came to rest, the windmill continuing to rotate for quite a long period afterwards. From the short flight it was perfectly obvious that in the "Autogiro" one has a machine which is capable of flying horizontally under perfect control; is able, if desired, to glide down at about the normal angle for an ordinary machine, or is capable of descending at a very low horizontal velocity indeed. Throughout the

The "Autogiro":
A close-up view
of the supporting
mast, hinges and
rubber cord top
bracing which
prevents the
wings from
drooping.



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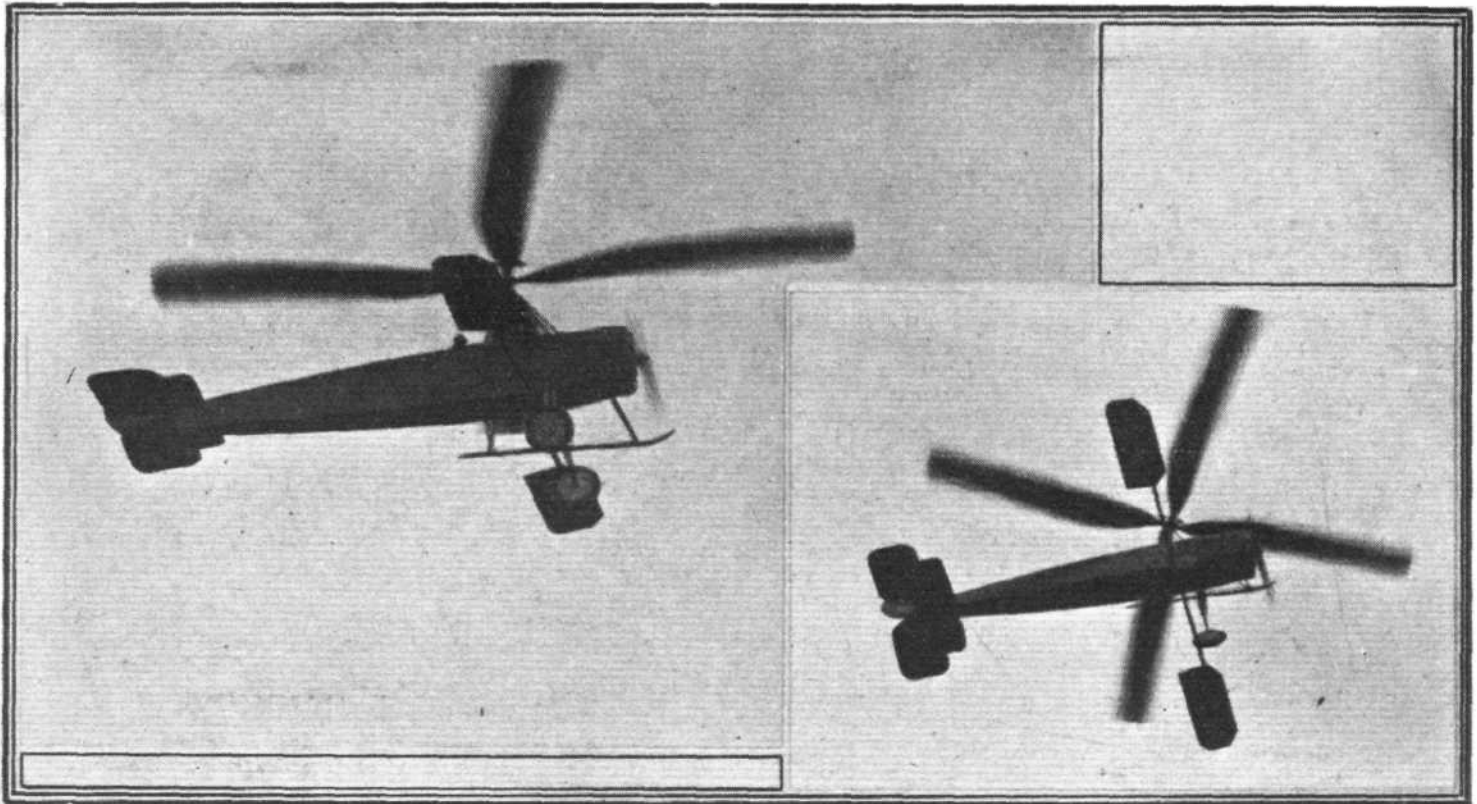
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THE CIERVA "AUTOGIRO" : These three views show admirably the action of the four-bladed lifting screw or windmill. In the lower view the machine is at rest on the ground, and the wings are drooping slightly. Above, the windmill has been started by means of a cable and has acquired a certain amount of speed, the machine having just started its run. In the top photograph, the machine is seen shortly before speed, the lifting planes having started to rise under the action of the lift. This is particularly "unsticking," the lifting planes having started to rise under the action of the lift. This is particularly noticeable in the wing pointing forward in the first photograph.



THE "AUTOGIRO" : Two views of the machine in flight. Note how the high tip speed of the windmill beat our photographer.

machine was evidently under perfect control and showed no tendency to "stall" in the ordinary sense of the term. Actually, when descending in a nearly vertical flight path, the rotating wings are, of course, following a helical path so that, although the machine itself is descending almost vertically, the lifting surfaces are actually gliding at fairly high speed, the only difference being that they follow a helical path while the machine itself follows a straight one.

Shortly after the conclusion of the test flight a very distinguished party arrived, including the Secretary of State for Air, Sir Samuel Hoare; the Chief of the Air Staff, Air Chief-Marshal Sir Hugh Trenchard; the Air Member for Supply and Research, Air Vice-Marshal Sir Geoffrey Salmond, and a number of other officials prominent in Government aviation circles, conducted by Mr. W. Sydney Smith, Superintendent

of the Royal Aircraft Establishment at Farnborough. Capt. Courtney and Senor de La Cierva briefly explained the principle of the "Autogiro" to an interested assembly, and Capt. Courtney then made several flights on the machine. On one occasion he came down in a very steep glide from about 600 ft, flattening out about 100 ft. from the ground, and flying off again without landing. Throughout the machine appeared to be under perfect control.

The action of the "Autogiro" has already been described in *FLIGHT*, but a brief outline may be of assistance, and may serve to fix ideas. The "Autogiro" is, in effect, a four-bladed airscrew mounted on an approximately vertical shaft, and having its blades pivoted around horizontal axes on this shaft. This "windmill" is not geared to the engine in any way, but is caused to rotate slowly by the air forces acting

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The "Autogiro,"
 piloted by Capt.
 Courtney, making
 an almost vertical
 descent.





THE "AUTOGIRO" DEMONSTRATION : Our group includes, from left to right, Senor J. de la Cierva, the inventor of the "Autogiro," Air Chief-Marshall Sir Hugh Trenchard, Chief of the Air Staff, Mr. C. L. Bullock, Private Secretary of the Air Minister, Sir Samuel Hoare, Secretary of State for Air, Air Vice-Marshall Sir Geoffrey Salmond, Air Member for Supply and Research, Capt. Frank Courtney, pilot of the "Autogiro," Air Vice-Marshall Sir Sefton Brancker, Director of Civil Aviation, Mr. W. Sydney Smith, Superintendent of the Royal Aircraft Establishment, and Squadron Leader Rollo Haig.

upon it. Perhaps the best way of realising the reason for its rotation is to picture the "windmill" as being stationary, while the machine is travelling forward. Disregarding for the moment the two blades which are in a fore and aft position, it will be obvious that the starboard blade is meeting the air leading edge foremost (the direction of rotation being anti-clockwise when viewing the windmill from above), while the port blade is meeting the air trailing edge foremost. The resistance of the blade travelling leading edge foremost is smaller than that of the blade travelling trailing edge foremost, with the result that the windmill begins to rotate.

It will be realised that during flight the blade which is travelling forward is at a greater relative velocity than that travelling back, the one having the machine's speed added to its own velocity and the other having it subtracted therefrom. In a rigid airscrew the result would be that there would be more lift on one side than on the other. By reason of the

blades being hinged, however, they are free to move up and down, and in doing so virtually increase and decrease their angle of incidence, thus equalising the lift on the two sides. The special feature of the "Autogiro" is that centrifugal force is relied upon to keep the blades outstretched against the action of the lift, and by slightly arching the blades the designer has attempted to ensure that all the stresses are purely tensile ones (with, presumably, a slight torque or twisting stress caused by the travel of the centre of pressure. As the chord is small and the wing section carefully chosen, presumably this travel is small, and consequently the torque is small also.)

This, very briefly, is the principle of the "Autogiro." A number of interesting problems naturally arise, but with these doubtless the inventor, Senor de la Cierva, will deal in the paper which he is reading tonight before the Royal Aeronautical Society.

LONDON AEROPLANE CLUB

DURING the month of September the two club D.H. "Moths" have flown 88 hours 40 minutes. F. G. M. Sparks, the senior pilot instructor, gave flying instruction for 45 hours 50 minutes, and G. T. Witcombe, the second instructor, for 42 hours 50 minutes. During the month there were four days on which no flying was possible. Since the opening of the club on August 19 last 72 members have received flying instruction, and of these several have completed over six hours dual control and three are flying solo.

During the week ending October 17 the following members were under instruction: L. J. C. Mitchell, G. H. Craig, Mrs. Elliott Lynn, Major K. M. Beaumont, E. A. Boyd, W. E. P. Johnstone, H. R. Thomas, S. O. Bradshaw, L. G. Pollard, A. L. Angus, N. H. Jones, J. Barros, A. P. Hunt, E. Thomson, A. Lees.

On Thursday, October 15, G. N. Warrick made the necessary flights to qualify him for his Royal Aero Club Aviator's Certificate. This is the first Aviator's Certificate

granted to a member who has received his flying instruction in the light aeroplane clubs.

There were practically four blank days during the week on account of fog and rain. The total flying hours for the week were 10 hours 25 mins. This was done on the one machine only. The machine damaged last week has now been repaired by the De Havilland Company and was handed back to the Club on Saturday.

The following arrangements have been made for booking times for flying instruction:—

On and after November 1, bookings for flying instruction may be made for one-hour flights. The total time booked for any one week must not exceed two hours. Bookings cannot be made for more than one week ahead.

Owing to the large demands for bookings by the present members and the somewhat long waiting list, it has been decided by the committee not to elect any further members this year.

THE SCHNEIDER CUP RACE

Saturday's Great Contest

On Saturday of this week the race for the Jacques Schneider Maritime Trophy will be flown at Bay Shore, near Baltimore, Maryland, and representatives of three nations will compete for supremacy. These are the United States of America (the present holders of the cup), Italy and Great Britain. The United States will be represented by two and possibly three defenders, while Italy has sent two challengers, and Great Britain also two. Actually Great Britain has sent four machines, but as only two were officially entered by the time the entries list closed, this number only will be permitted to compete. At the time the entries were made there seemed to be little likelihood of more than two machines being built in time to take part in the race, and, consequently, the mistake was made of entering two machines only.

History of the Schneider Cup

The Schneider Cup for seaplanes, presented by Monsieur Jacques Schneider, a member of the famous French armament firm, was first competed for in 1913, when it was won by the French pilot, Prevost, who was flying a Deperdussin monoplane. The course was one of a 150 nautical miles (278 kms.) or 172.83 land miles, and Prevost covered the total course in 3 hrs. 48 mins. 22 secs., at the average speed of 72.6 kms. (45.75 m.p.h.).

In 1914 the race was again held at Monaco, over a distance of 280 kms., and was won by the British pilot, Howard Pixton, on a Sopwith biplane with 100 h.p. Gnome Monosoupape engine, the flying time being 2 hrs. 0 mins. 13½ secs. This corresponded to an average speed of 139.7 kms./hr. (86.8 m.p.h.).

Owing to the War, 1914-18, the Schneider Cup race was suspended until 1919, when, a British pilot having last won it, the Schneider Cup race was organised by the Royal Aero Club of Great Britain, and held at Bournemouth. Foggy weather compelled most of the competitors (France, Italy and Great Britain were represented) to abandon the race, but the Italian pilot, Janello, who was flying a Savoia biplane flying-boat, flew the prescribed number of circuits, but he was not observed from one of the mark boats, and after considerable controversy the contest was annulled.

In 1920 the Schneider Cup race was, by way of compliment to the fine determination of Janello in the previous year's race, handed over to the Aero Club of Italy to organise, and was held at Venice. For that year's race no British machine had been built, and the only foreign challengers were entered by France. The race was won by the Italian pilot, Luigi Bologna, who was flying a Savoia flying-boat. The distance was one of 375 kms., and the time taken by Bologna was 2 hrs. 10 mins. 35 secs., corresponding to an average speed of 172.3 kms./hr. (107 m.p.h.).

The 1921 Schneider Cup race was again held at Venice, and was over a distance of 370.4 kms. It was won by the Italian pilot, de Briganti, on a Macchi flying-boat, his time for the distance being 2 hrs. 4 mins. 29 secs., corresponding to an average speed of 178.5 kms./hr. (111 m.p.h.). No British machine competed in this event.

It being one of the conditions of the Schneider Cup contest that the cup has to be won three years in succession to become the property of the winner, the 1922 race caused very considerable interest, since, should it be won by Italy for the third time, it would remain the property of that nation and would mean the end of the Schneider Cup contests. In a most commendable sporting spirit the Supermarine Aviation Works of Southampton built for that race, entirely unassisted by the Government, a biplane flying-boat fitted with Napier "Lion" engine. The machine took part in the 1922 Schneider Cup race, and, not merely won the race, but won it at a speed which was 34.7 m.p.h. faster than the average speed of the previous year's winner. The Supermarine flying-boat, which was piloted by Capt. H. C. Biard, covered the distance of 370.77 kms. in 1 hr. 34 mins. 51½ secs., or at an average speed of 234.516 kms./hr. (145.7 m.p.h.). Capt. Biard's magnificent win at Naples in 1922 resulted in the cup being brought to England, and the 1923 Schneider Cup race being held at Cowes.

For the 1923 race, challengers had been entered by France as well as by the United States. The course was one of 345 kms. and was won by the American aviator, Lieut. David Rittenhouse on a Curtiss-Navy racer with Curtiss D.12 engine, at an average speed of 177.38 m.p.h., which represented the magnificent increase of 31.68 m.p.h. over Biard's speed for the previous year. Again the Supermarine

Aviation Works had entered a defender, but as funds did not allow of producing an entirely novel design, the machine was quite outclassed by the American challengers, who carried off the cup with ease. The American victory in 1923 resulted in the 1924 Schneider Cup race being transferred to the United States. As, however, no foreign challengers presented themselves, the Americans, with admirable sportsmanship, declared "No race" rather than walking away with the cup, which they had every right to do owing to the absence of challengers. This action on the part of the Americans was one of the finest gestures of real good sportsmanship in the whole history of aviation, and was greatly appreciated in this country, since, if the Americans had claimed a "walk-over" (which they had every right to do), Great Britain's chances of winning the cup would have been considerably diminished.

The 1925 Schneider Cup Race

The race for the 1925 Schneider Cup is to be held at Baltimore on Saturday next, October 24, the actual Schneider Cup course being situated at Bay Shore, some 14 miles out of Baltimore. The location of the course is shown on the following map and, unless a gale is blowing on the day of the race, or on the preceding day when navigability and watertightness tests have to be carried out, the triangle over Chesapeake Bay should be fairly sheltered, as it is land-locked on three sides. The total distance to be covered is 350 kms. (217.5 miles).

The actual course is, as already mentioned, a triangular one, and measures 50 kms., so that competitors will have to make seven laps of the course. As has previously been pointed out in FLIGHT, the question of cornering will play a very considerable part in the race, since each leg of the course is so short that almost as soon as the engines have been opened out after rounding one turning point, they will have to be throttled down again before making the next turn. It is unlikely that machines will be able to take the corners at full speed, as the physical effect on the pilots will be considerable and, therefore, the speeds established round the course will probably fall very far short of the actual top speeds of which the machines are capable.

The organisation of this year's race will be in the hands of the American National Aeronautic Association, which is the American equivalent of our Royal Aero Club, and will represent the *Federation Aeronautique Internationale*, both in the actual races and in any attempts at new records which may be made after the race. The local sporting body which will assist the National Aeronautic Association will be the Flying Club of Baltimore. As previously mentioned, the day before the race, navigability and watertightness tests have to be carried out, in the course of which the machines must take off from the starting line, take the air, alight again and taxi between two buoys at a speed of over 12 m.p.h., take off, land, taxi one-half mile between a second set of buoys, then take off for the third time, land, and taxi over the finishing line. Having completed the navigability tests the machines must then, without being touched or repaired in any way, be moored out for six hours with no one on board. Should a float be damaged in the navigability tests, so that a machine has to be touched or beached in order to prevent it from sinking before the end of the six hours, the machine will not be allowed to compete in the race. These conditions in the Schneider Cup Race are, of course, designed with a view to preventing freaks which are neither sea- nor air-worthy being entered in the race, and also to ensure, as far as possible, that machines should have a reasonable amount of practical value.

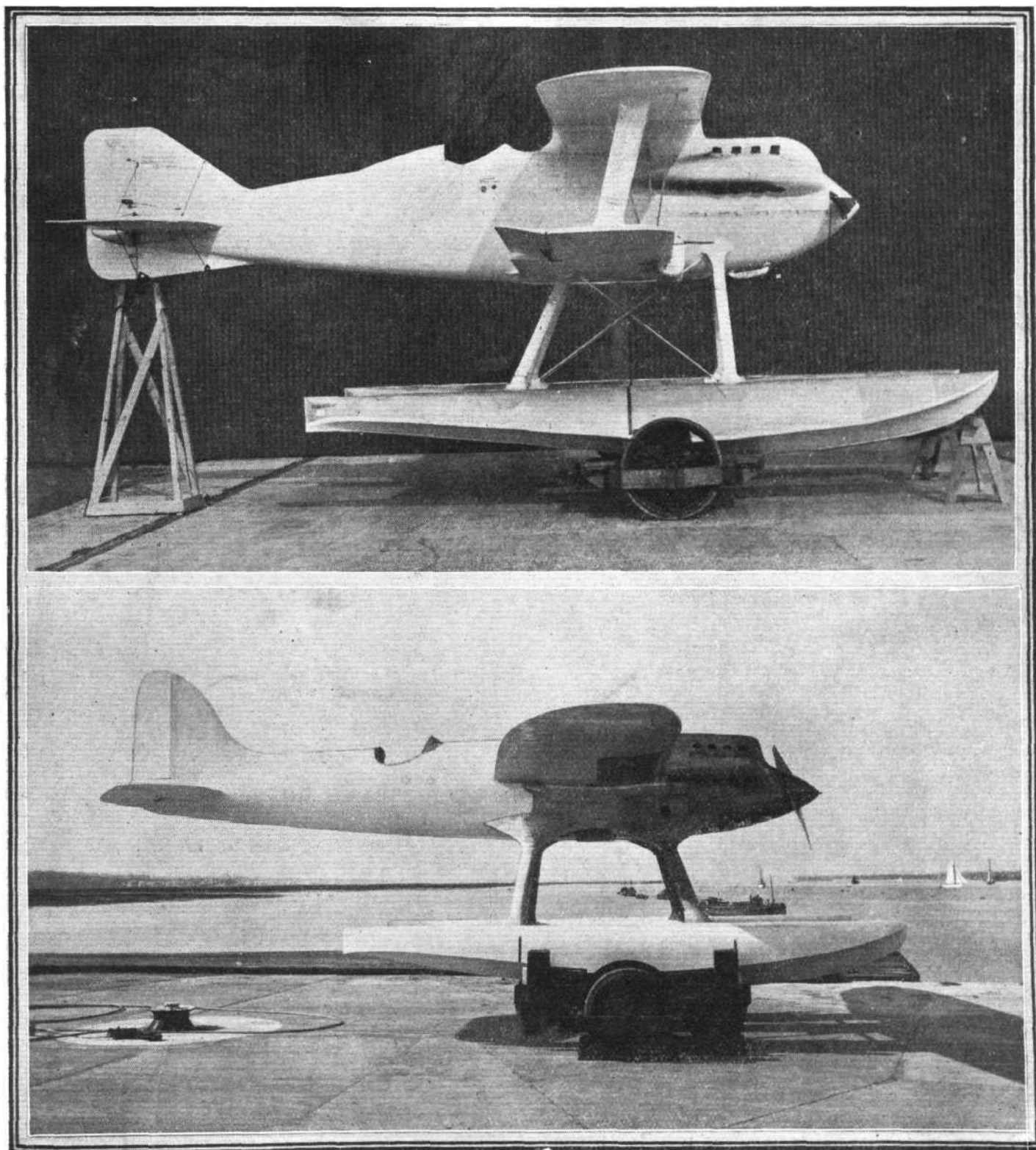
On October 24, the programme of events will be as follows:— At 1 p.m. proceedings will be opened with a naval air demonstration, which will include the laying of smoke screens and curtains by aircraft, aerial acrobatics and fighting, formation flying, torpedo and bomb dropping. At 2.30 p.m. the famous Schneider Cup race, which is the international marine flying classic of the world, will commence, and as the machines should complete the course in somewhat less than an hour, the result of the race should be known in this country on Saturday evening, allowing for the difference in time between London and Baltimore. Competitors will be started at five-minute intervals, and the order of starting will be as follows:— 1, Great Britain (Capt. H. C. Biard); 2, United States (Doolittle); 3, Great Britain (Capt. H. S. Broad); 4, United States (Cuddihy); 5, United States (Ofstie); 6, Italy;

7, Italy. In all probability some of the machines competing in the race will attempt, the next day, to establish new world's records over the 3 km.-course, which is parallel to the Bay front, and which should really give an indication of the actual top speed, of which the machines are capable. The flights over this 3 km.-course have, of course, nothing to do with the Schneider cup race, but will be purely for officially observed record attempts.

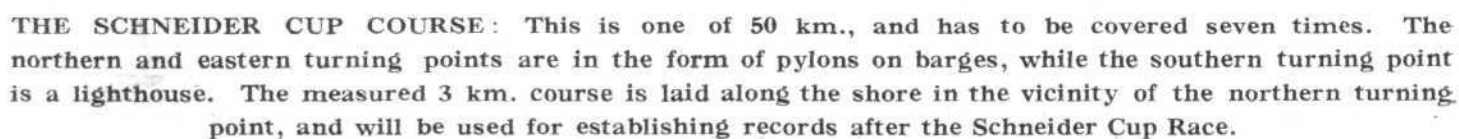
THE MACHINES

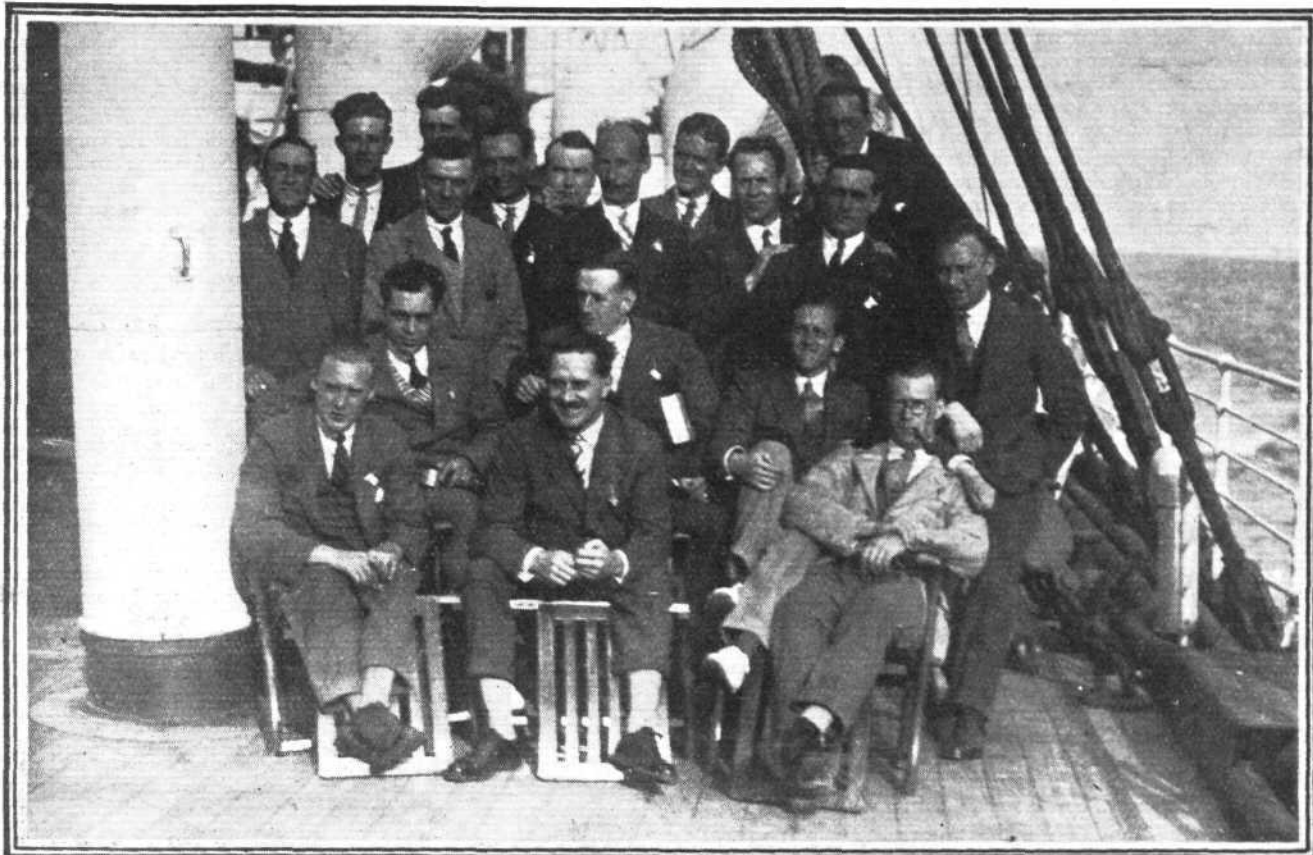
Although, at the moment, complete particulars of the various competing machines are not available, a certain amount of general information can be given and may probably be of interest. The American defenders are Curtiss-Navy racers fitted with the new Curtiss V.1,400 engines. The

machines are somewhat similar to those taking part in the Pulitzer Race, which was won by Lieut. Cyrus Bettis at a speed of 248.99 m.p.h., and practically the only alteration will consist in substituting floats for the wheel undercarriage. The machines, which are known as the type R.3.C.2, and one of which, in the Pulitzer Race, proved somewhat slower than the winning Army-Curtiss, its average speed round the Pulitzer course being 241.71 m.p.h., were designed and built by the Curtiss Aeroplane and Motor Company, Inc., of Garden City, N.Y. The V.1400 engines are the modern and improved versions of the type D.12 engines with which the American racers were fitted in the 1923 Schneider Cup Race at Cowes. It is believed that the engine has been somewhat lightened, while at the same time the power has been increased to rather more than 600 h.p. The machines are biplanes of, approxi-



THE SCHNEIDER CUP RACE: These two side views of the British challengers, the Gloster-Napier III and the Supermarine-Napier S.4, enable a comparison to be made between the two machines. Both are, of course, fitted with Napier racing engines. The Supermarine-Napier S.4 holds the world's speed record for seaplanes with 226.752 m.p.h.





ON BOARD THE "MINNEWASKA": This group includes the complete British Schneider Cup team. In the front row, Mr. Mitchell, Capt. Wilson and Mr. Folland, and, in the next row, the three pilots, Mr. Hinkler, Capt. Biard and Capt. Broad.

mately, the following dimensions: Span, 22 ft.; length of fuselage, 19 ft. 9 ins.; overall height, 8 ft.

A special feature of the R.3.C.2 racers is that wing radiators are employed, and are actually built into the wing, whose contour they follow, offering extremely small head resistance. It is possible that a third American machine will be competing in the Schneider Cup Race, this being the type R.3.C.2, which is last year's Curtiss-Navy racer, but as this machine is reported as being nowhere near as fast as the two 1925 types, it is regarded more in the way of a standby, although, owing to the problems of cornering, there is always a possibility

that a slower machine may make as good, or even better time, around the course than the faster type.

The two Italian challengers are Macchi monoplane flying-boats of the type M.33, and fitted with Curtiss D.12 engines. The general design of the machines is unusual in that the monoplane wing is set low down on the hull, while the engine is mounted at a considerable height above the hull. The dimensions of the Italian machine are considerably greater than both the American and British, the span being 32 ft. and the wing area 175 sq. ft. Naturally, no figures are available relating to performance, but it seems unlikely that,



ON BOARD THE "MINNEWASKA": A siesta is enjoyed by Capt. Broad, Capt. Biard, Mr. Mitchell, Mr. Folland, and Capt. Wilson.

with engines of lower power and with greater wing surface, the Italian challengers can be quite as fast as the American or British machines, and one would not imagine that the particular arrangement would tend to make the machines quite so easy to handle on corners.

The British challengers will be the Gloster-Napier III and the Supermarine-Napier S.4, both fitted with special Napier racing engines. The Gloster-Napier III was designed by Mr. H. P. Folland and built by the Gloucestershire Aircraft Company, of Cheltenham. Two machines have been constructed and sent to America, but, except for possible mishaps, only one Gloster-Napier III will be able to take part in the race, since but two machines altogether were entered by Great Britain. The Gloster-Napier III is a twin-float biplane mainly of wood construction, but having normal wire bracing for the wings and undercarriage. The fuselage is covered with plywood except for the front portion, where the covering over the Napier engine is, of course, of aluminium. The biplane wings are fabric covered. The long single-step floats are entirely of Duralumin, and were built by Short Brothers of Rochester.

The Supermarine-Napier S.4 was designed by Mr. R. J. Mitchell and built by the Supermarine Aviation Works at Southampton. It is a monoplane of exceptionally clean design and is constructed mainly of wood and covered entirely with ply-wood. The front portion of the fuselage, however, is a steel-tube structure, to which are attached the wing and the undercarriage struts. The latter are circular-section tubes of high-tensile steel and the undercarriage is remarkable on account of the fact that no wire bracing of the struts is employed, the four steel tubes being pure cantilevers whose flexibility provides a certain amount of springing of the floats. The latter, unlike those of the Gloster-Napier III, are built entirely of wood, as the Supermarine firm prefer this form of construction, with which they are familiar and of which they have had very long experience. The Supermarine-Napier S.4, it will be remembered, before leaving for the United States, established a new world's speed record for seaplanes by covering four laps of the measured 3 km. course at an average speed of 226.752 m.p.h. This flight was made before the machine was properly tuned up, and before the pilot, Capt. H. C. Biard, had had an opportunity of becoming thoroughly familiar with it, so that there is little doubt that the actual top speed of which this machine is capable is very considerably higher than the average speed established in the record flight.

The Pilots

One of the American machines will be piloted by Lieut. "Jimmy" Doolittle, and it is of interest to note that Doolittle is an Army pilot, and that his machine has been entered by the U.S. Army Air Service. Thus there will be considerable keenness, apart from the question of winning the Schneider Cup, for the Army to beat the Navy at its own game. Lieut. Doolittle is one of the most famous American test pilots, and is stationed at the American equivalent of our R.A.E.—McCook Field. He is one of the pilots who have been testing machines to destruction by deliberately trying to break them in the air and then descending in a parachute.

The two American Navy defenders will be piloted by Lieutenants Ralph A. Ofstie and G. T. Cuddihy, respectively. Ofstie is in the Bureau of Aeronautics, which corresponds to our Air Ministry, and Cuddihy is stationed at the Naval air station at Anacostia, Washington, D.C. The spare pilot will be Lieut. F. H. Conant, of the Bureau of Aeronautics. Lieut. Cuddihy was, previous to the new world's speed record for seaplanes established by Biard on the Supermarine-Napier S.4, the holder of that record with a speed of 188.118 m.p.h. Lieut. Ofstie also holds some world's seaplane records made at the same time as Lieut. Cuddihy's. His records are for speeds over 100, 200 and 500 kms.

Concerning the Italian pilots, it is regretted that relatively little information is available. De Briganti, it will be recollected, won the Schneider Cup Race on a Macchi flying-boat in 1921 at Venice, and is a pilot of long experience of fast seaplanes. At the moment it is not known who will be the second Italian pilot.

The British pilots entered for the Schneider Cup Race will already be familiar to readers of FLIGHT. Capt. H. C. Biard, who will pilot the Supermarine-Napier S.4, obtained his pilot's licence at the Grahame-White School at Hendon in 1912, and is probably the only British pilot to have obtained his "ticket" so long ago, who is still flying regularly. He has been chief test pilot to the Supermarine Works since the end of the war, and has had a vast amount of experience in piloting seaplanes of all types, from the largest twin-engined flying-boats to the present Schneider Cup challenger.

At the moment it is not definitely settled who will pilot the Gloster-Napier III in the race. Capt. Hubert Broad, the well-known de Havilland test pilot, is known to be one of our best pilots, and has experience of a great variety of types. It was, it will be remembered, Capt. Broad who was nominated pilot of last year's Gloster Schneider Cup machine, which was crashed during a test flight through no fault of the pilot. Mr. Bert Hinkler has of recent years come rapidly to the front, and is now regarded as one of our very best pilots. He has made several famous long-distance flights on low-power machines, notably on the Avro Baby, and in his capacity as test pilot to the Avro firm he has flown a variety of types. It may also be recollected that he was the first man to fly an aeroplane fitted with the 1,000 h.p. Napier "Cub." The actual decision as to whether Hinkler or Broad will fly the Gloster-Napier III, will depend upon how they show up during the practice flights before the race.

EN ROUTE TO U.S.A.

A VERY good friend of FLIGHT made the trip across to New York in the *Minnewaska* with the British Schneider Cup team, and he has now sent us a lot of chatty notes relating to the trip across and the arrival in America. It is very much to be regretted that space does not permit of publishing the notes in full, but in the following the main events of the journey have been summarised.

After leaving London on September 26, the *Minnewaska* slowly made its way to Cherbourg, which was reached at 10 a.m. on Sunday, October 27, and it was 4.30 p.m. before the real journey across the "Herring Pond" commenced. As mentioned in FLIGHT in the account of the send-off given to the Schneider Cup team by the Royal Aero Club, Mr. A. V. Roe joined the party at the last minute and made the journey across to New York with the team. Those present at the send-off will remember the certificate from the A.I.D. which was handed to Capt. Wilson by Sir Geoffrey Salmond. This humorous C. of A. was attached to the wall facing the main staircase, where it attracted considerable attention. The certificate included, it is believed, every rubber stamp possessed by the A.I.D., and was illustrated with two full-page sets of pictures taken from FLIGHT.

In addition to the inanimate "Lions" on board, the *Minnewaska* also carried two live leopards, as well as several baboons, monkeys, and kangaroos (not of the Blackburn type!).

During the trip across a fancy dress dance was held one evening, and the Schneider Cup team covered themselves with glory. Mr. H. P. Folland as a perfectly good seaman of the *Minnewaska* carried off first prize, and thoroughly deserved his success. Capt. Biard was a most respectable parson and used the opportunity to display his drollery to perfection. Mr. Mitchell went as an American seaman, and Mr. Jones, of Napier's, as a modern flapper. Mr. A. V. Roe, as a mechanic, must have been reminded of his early days in aviation.

On landing in New York on the morning of October 5, the Schneider Cup team was met by Mr. Charles A. Masson, of the Baltimore Flying Club, and a number of other prominent people interested in aviation. After lunch at the Pennsylvania, the party proceeded to Baltimore, which was reached that evening. There they were met by the General Secretary, of the Baltimore Flying Club, Major Tipton, and numerous members of the Club. The team proceeded to the Southern Hotel, Baltimore, which is their headquarters during their stay in America. Mr. Masson proved a very real friend and helped the team considerably, not only as regards the personnel but also in the matter of unloading the machines and engines. On arrival, the team was met by Colonel Darby, Mr. Fairey, and many other old friends.

Our correspondent is full of praise for the kindness and hospitality shown the team in Baltimore. In addition to Major Tipton, there were present at the station Major N. Joyce, Mr. T. Hildebrandt, Mr. George C. Smith, and many other prominent members of that Club. These gentlemen were later reinforced by Mr. T. Perry, Mr. Sifford Pearre, Mr. Warrington Gillette, D.S.O., D.F.C., and Mr. A. T. Abernethy, and all were extraordinarily kind, and nothing seems to have been too much trouble for them in their efforts to make the British Schneider Cup team feel at home.

Concerning the location of the Schneider Cup course and the general arrangements for the Race, our correspondent states that the work to be done was enormous, as there was nothing with which to start and everything had to be built up. Even dredging operations had to be undertaken to facilitate getting the machines into the water, as the beach at this particular point slopes very gradually, and, in consequence, the water is very shallow for a considerable distance out.

THE TREND OF AIRSHIP CONSTRUCTION IN ITALY

By ENGINEER UMBERTO NOBILE

(Concluded from page 674)

THE remarkable progress achieved in the N.1 (18,500 cub. m.) airship, the improvements successively tested out with good results first on the small "Mr." and subsequently on the N.2 (7,000), finally put the Airship Construction Establishment in a position to start building the large semi-rigid 51,000 cub. m. (1,800,300 cub. ft.), which will almost certainly be a great success. The work was started a few months ago and the airship should be ready by the spring of 1927.

This airship will have a volume one and a-half times that of the dirigible "Roma," which was built in 1919-20. (See FLIGHT for January 26, 1922.) It will definitely solve the problem of the adaptation of the semi-rigid type to large volumes.

While on the one hand, said Sig. Nobile, they had utilized the results of practical experience acquired with the last

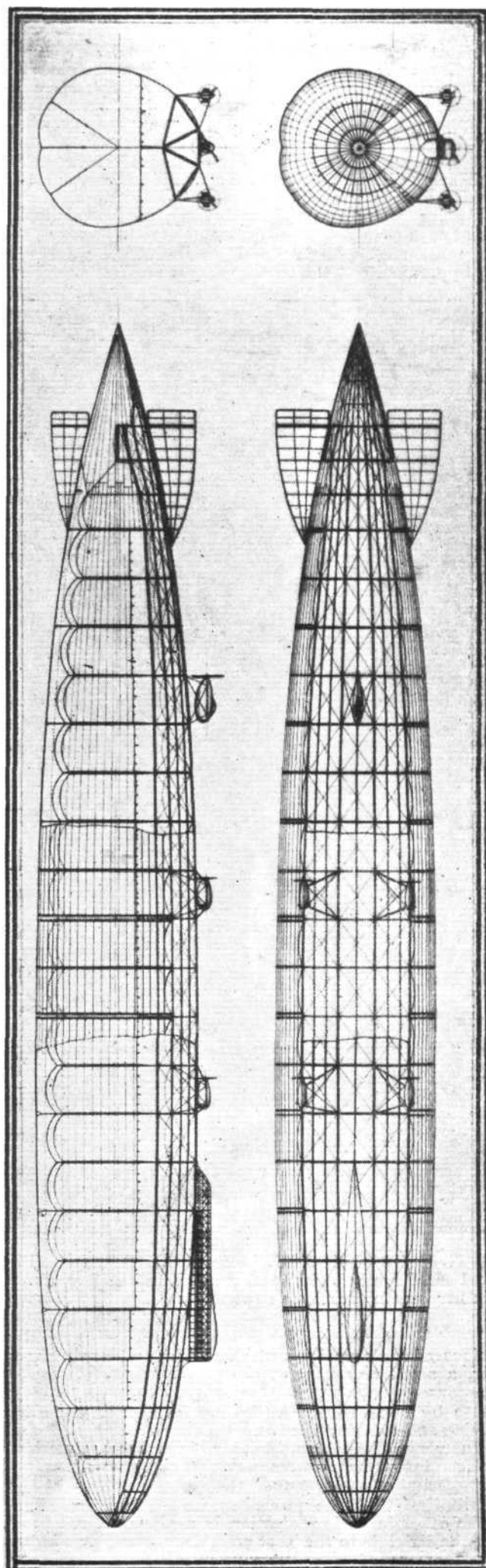


Engineer Umberto Nobile, Director of the Italian Airship Construction Establishment, who has been responsible for the design of many successful airships.

airships, on the other hand they had not hesitated to introduce a few radical innovations made necessary precisely on account of the large volume. Of these, the most important concerned the metal framing. (The new type of framing is shown in one of the accompanying illustrations.)

Substantially, it consisted of a central prismatic part of triangular section, vertex upwards, fitted with lateral brackets which were rigidly joined together by means of beams and diagonals resting on the external surface of the hull.

In this way a transversal section of the framing formed a pentagon divided into three triangles, and consequently a trunk included between two sections appeared to be constituted by three triangular prisms, one adjacent to the other. The three surfaces of the central prism were diagonally ribbed, while the two lateral prisms (each having a surface in common with the central prism) had only two of the surfaces braced diagonally: the surface which was internal to



THE TREND OF AIRSHIP CONSTRUCTION IN ITALY: Drawings of the N.51,000 cub. m. semi-rigid now under construction.

the envelope was not braced diagonally. The ascensional forces and the loads were concentrated in the vertices of the pentagon.

With this new and original type of framing, Sig. Nobile said, he aimed at securing essentially the following points:—

(a) To give the framing a considerable height (and so be well-proportioned to the bending moments which stressed it) without, however, being obliged to increase the bulk in height of the dirigible, with a consequently misplaced utilization of the space available in the hangar, and, on the other hand, without being obliged to renounce a considerable volume of gas.

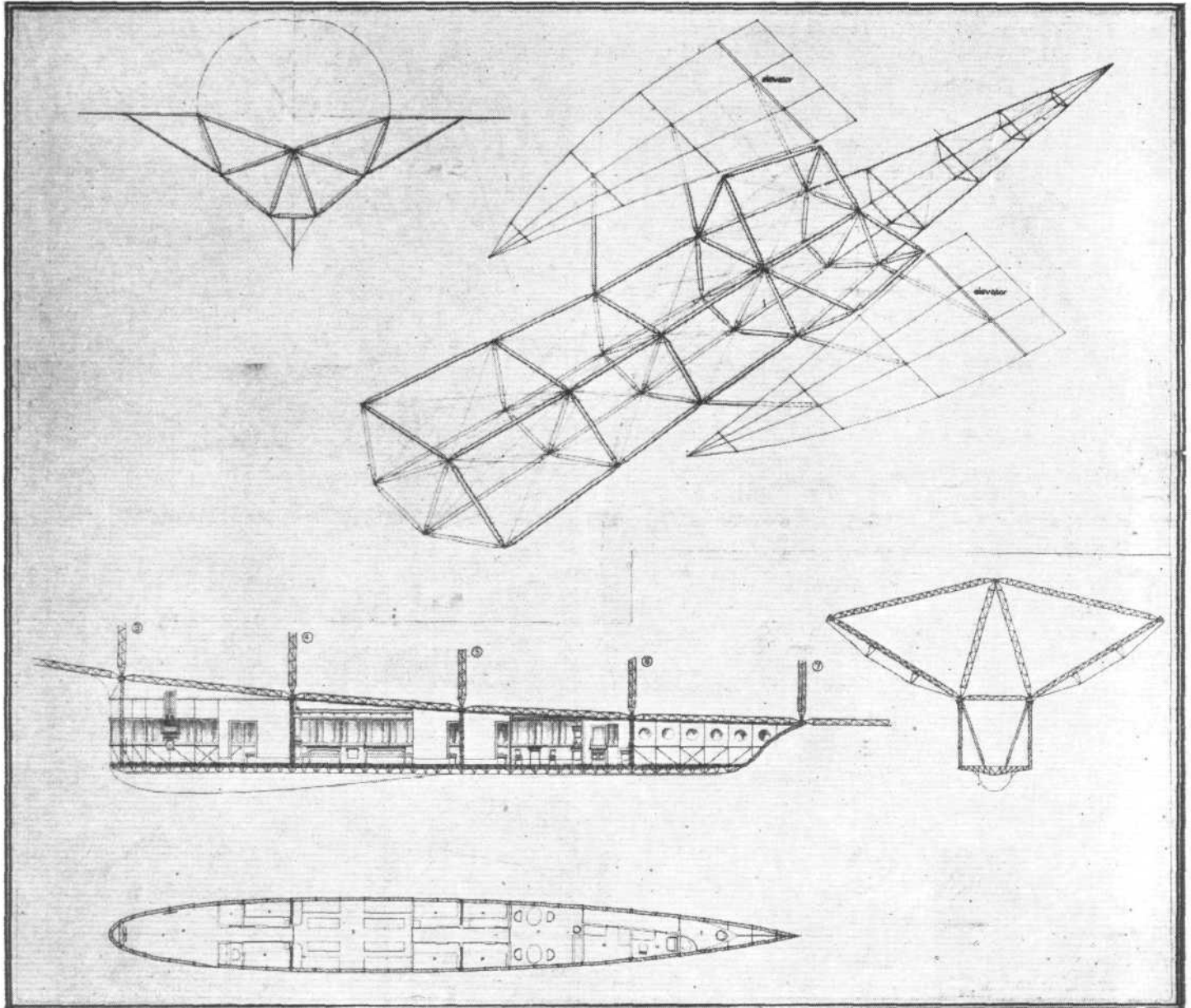
(b) To give the framing sufficiently large transversal dimensions and such that, under the action of the gas pressure, the envelope assumed a transversal profile which was sufficiently approximate to the circular shape.

major transversal dimensions of the framing permitted a more rational attachment of the handling lines, thereby facilitating all manœuvres.

(d) To make the flexible part of the hull (the fabric) less sensitive to variations of internal pressure.

(e) To furnish a more efficient and more rigid support than the present one both for the nose-stiffening and for the tail surfaces. In fact, the upper central longitudinal element of the framing ran up to the centre of the stiffening cupola which was thus very solidly supported, while in the stern, a light and robust metal structure, rigidly supporting the horizontal surfaces and the elevators, was rabbetted into the framing. Unlike the N.2, these fixed and mobile surfaces were in this case located in the equatorial plane, thereby increasing efficiency thereof.

But the chief characteristic of the new type of framing



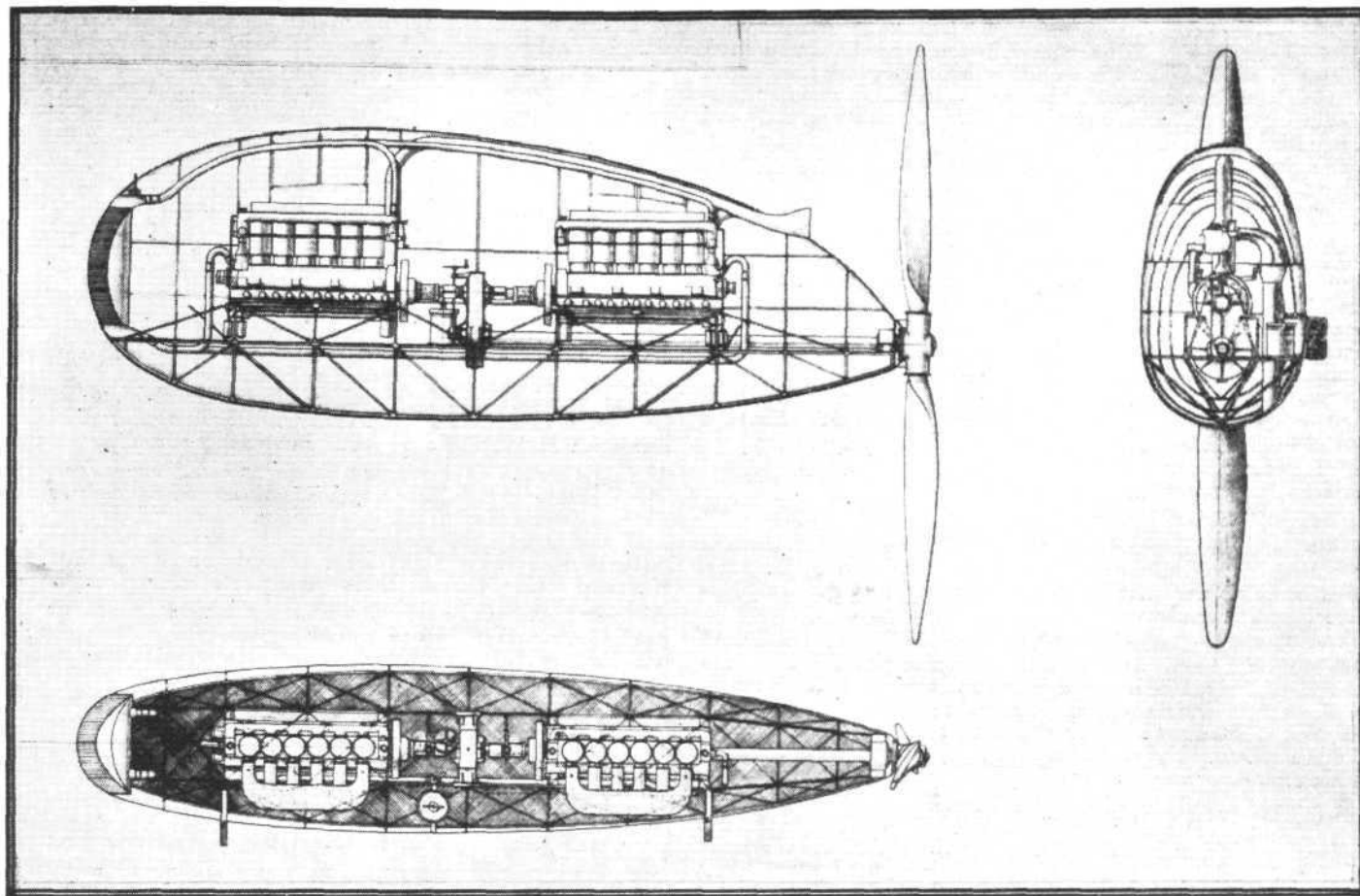
THE N.51,000 CUB. M. SEMI-RIGID AIRSHIP: Drawings showing, above, the rear portion of the central keel framework and horizontal tail surfaces, and, below, the main central cabin. This is divided into four main sections: control (including wireless and captain's quarters); general saloon; sleeping berths and lounge; offices.

Various advantages accrued therefrom and also, in particular, a small reduction of the area of the main section with a consequent minor resistance to advance, and a minor purchase by flanking winds (thereby facilitating operations in leaving and entering the hangar).

(c) In view of the considerable transversal dimensions of the framing, there was the possibility of suspending to it, in a simple and efficient manner, the engine nacelles with such a distribution that the propellers were superimposed one over the other in their projection in a plane normal to the axis of the dirigible to the least possible amount, thus obtaining an increase of propeller efficiency. Furthermore, the

consisted in the fact that the gas chamber, where located between two transversal sections, was able to expand in the shape of sacks inside the lateral prisms, so that after all, the volume lost for the gas was merely that corresponding to the central prism.

One of the accompanying illustrations gives an idea of the control cabin, which in this type of dirigible was also incorporated in the framing. It offered a minimum resistance to advance and the dimensions were such as to permit the proper installation of all fittings necessary for navigation, and also afforded comfortable accommodation for both crew and passengers.

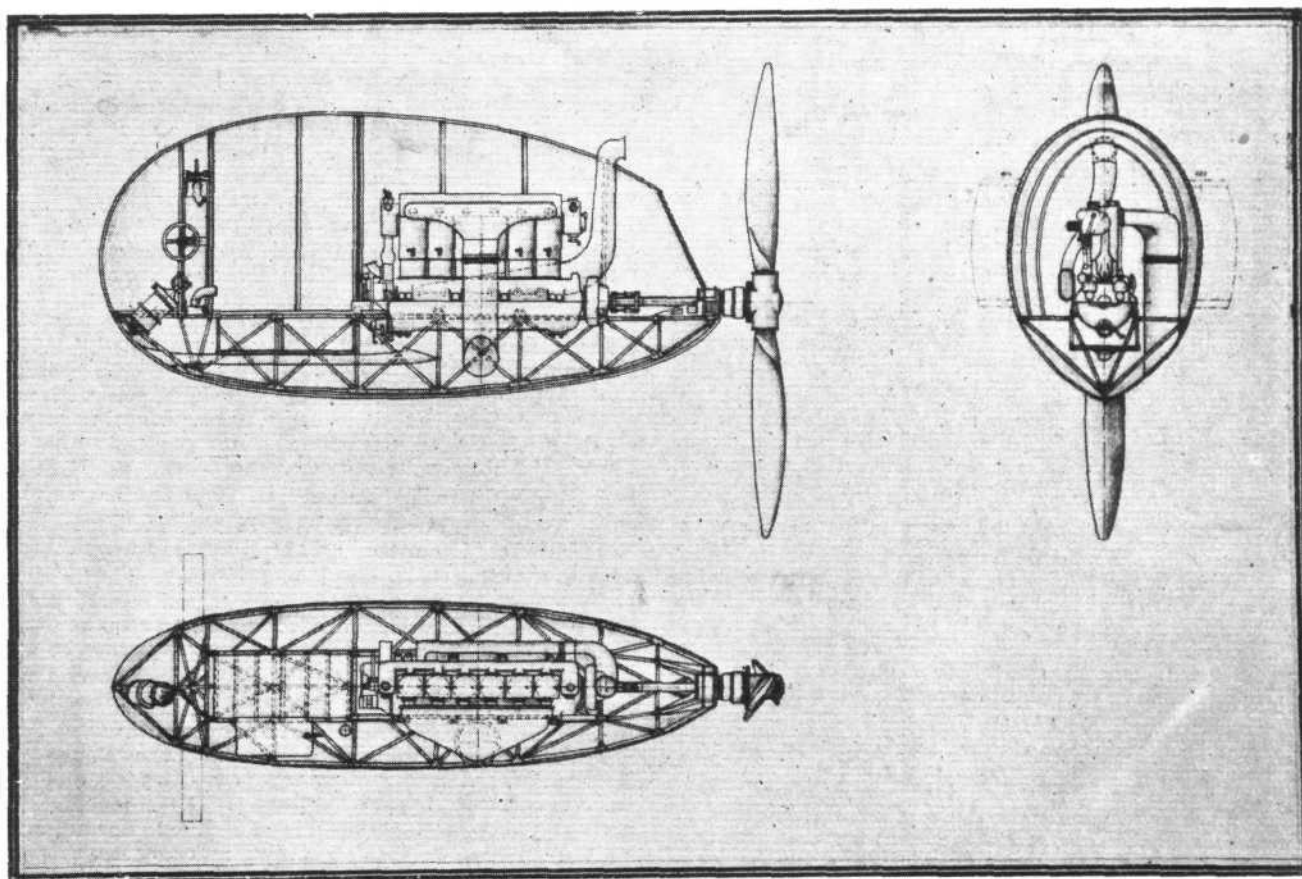


The central (rear) engine nacelle of the N. 51,000 cub. m. semi-rigid airship.

The *motive power* consisted of six engines of the same type as those with which the N.1 was equipped, with a power of 245 h.p. at 1,400 r.p.m. These six engines were distributed in five nacelles, the central nacelle at the stern containing two

which, by means of a reduction gear, drove a single propeller of the reversible type.

Also in this case, as in the other dirigibles of the same type, the engine nacelles were cable-suspended from the framing.



One of the lateral engine nacelles of the N. 51,000 cub. m. semi-rigid airship.

With respect to the others, however, a refinement had been introduced, viz., the water radiator had been divided into two sliding parts so as to expose to the air only the portion necessary, while, when the engine was not running they could be made to re-enter entirely inside the cowling. The approximation or separation of the two parts of the radiator was effected by means of a screw operated by a small hand wheel. The other elements of the dirigible substantially did not differ from those of the N.2 and N.1 types.

Characteristics of the N.51,000

Gas chamber (actual practical volume)	51,000 c.m. (1,800,000 cub. ft.)
Length	173.6 m. (557.6 ft.)
Mean diameter of main section	24.28 m. (79 ft.)
Maximum height	27.40 m. (89 ft.)
Maximum width	25.40 m. (82 ft.)
Own weight	29,000 kgs. (63,800 lbs.)
Useful load	28,650 kgs. (63,030 lbs.)
Total horse-power (at 1,400 r.p.m.)	1,410 h.p.
Corresponding speed	110 k.p.h. (68 m.p.h.)

It should be borne in mind, Sig. Nobile said, that in designing the dirigible (as, in fact, was the case with all the ships built at the Airship Establishment), the above figures were taken at sea level and fully loaded conditions.

The concluding portion of Sig. Nobile's paper dealt with the mooring mast as applied to semi-rigid airships. He would, said Sig. Nobile, sum up the question of the employment of the mooring-mast as follows: "The mooring-mast was practicable only for comparatively short stops."

The advantages of the mooring-mast were substantially as follows:—

- It was possible to land or take-off even in strong winds.
- The number of men for handling the dirigible was reduced to a minimum as the operations could be effected with mechanical means.
- The expenditure of erecting a mooring-mast was much smaller than building a hangar.

These advantages were such that the general adoption of the mooring-mast would undoubtedly facilitate the commercial and also the military employment of dirigibles. However, he thought it was rather risky to foreshadow—as some tech-

nicians had done—that in the near future the present hangars would have exclusively the functions which dockyards had with respect to ships. It appeared evident to him, however, that at the terminals of an important commercial air line there should be hangars not only for making repairs on a large scale, but also for housing the airships in the event of long periods of inactivity pertinent to the particular kind of service that was being operated, or, again, simply for housing them during stormy weather. On the other hand, the mooring-mast found rational application at intermediate stations where the airships made short stops for refuelling, or for loading or unloading passengers and merchandise, or even at terminals in addition to the hangars.

In Italy the first mooring-mast, about 40 ft. in height, was designed and built by himself in 1920 for small airships, but for a number of reasons it was never installed and experimented with.

The problem had been taken up again lately, and they had come to the conclusion that while in the case of Italian dirigibles of the old type with superficial stiffening (a type now entirely abandoned) the mooring-mast was ill adapted, the "Roma" and "N" types, on the other hand, were particularly well adapted.

It was not an exaggeration to state that the modern type of semi-rigid was actually safer on a mooring-mast than was the rigid type. In fact, in the event of breakage, the consequences were very much less serious in the case of a semi-rigid than they were for a rigid, because with the former the gas chamber would rarely if ever suffer in the event of damage to the nose-stiffening.

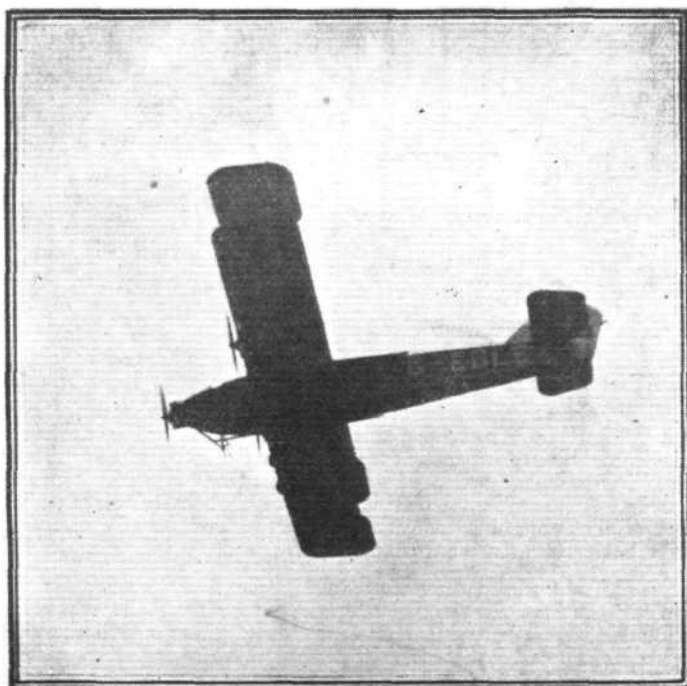
On the other hand it must be admitted that the rigid type (and also the Forlanini semi-rigid) was in a more favourable condition as regards resistance of the gas chamber to inclement weather conditions. But in order to judge of the practical importance of such advantages, it was necessary to wait for the results of experience.

In Italy, in a few months' time, they would adapt an N 1 (18,500) airship for mooring to the mast. If, as was expected, results proved satisfactory, the device would be adopted also for the new 51,000 cubic metre airship.

In the meantime, the new model of the small "Mr." dirigible now under construction was being prepared for mooring on a mast of a special type, dismountable and transportable. If this innovation came up to expectations, it would serve to extend considerably the field of practical application of this miniature dirigible.

HANDLEY PAGE "HAMPSTEAD" DELIVERED

THE first of a number of three-engined Handley Page Commercial aeroplanes on order for Imperial Airways was delivered by air to the latter at Croydon aerodrome on October 19. This new machine, the W.9 "Hampstead,"



The Handley Page "Hampstead" arriving at Farnborough from Croydon.

fitted with three Armstrong-Siddeley "Jaguar" engines—which was fully described, with general arrangement drawings, in FLIGHT for October 1 last—was flown from Cricklewood aerodrome to Croydon by Capt. Hinchliffe, one of the veterans of commercial flying. The "Hampstead" carried quite a distinguished "cargo" in the person of Mr. Handley Page himself, who was accompanied by Lieut.-Col. H. W. S. Outram and Maj. C. C. Turner.

On arrival at Croydon the machine was received by Sir Eric Geddes, who is Chairman of Imperial Airways, and later gave a demonstration flight. It may be of interest to note that on this same day the Japanese airmen, Maj. Abe and Mr. Kawachi, were just about to leave for Brussels, and were much interested in the "Hampstead." After the demonstration flight—Sir Eric being one of the passengers—the "Hampstead" left for Farnborough with several passengers, who, on their arrival were just in time to see Capt. F. J. Courtney make his last flight on the Spanish Cierva "Autogyro." After a short stay at Farnborough the "Hampstead" was flown back to Croydon.

Sweden-Southampton Flight by Dornier

A DORNIER-WAL seaplane arrived at Southampton on October 4 from Sweden. It made the 600-mile flight from Gothenburg in two stages, having made a stop at Norderney (Frisian Islands). The flight was in the nature of a test in connection with a scheme for a North Sea service which is under consideration by Imperial Airways.

Maharajah of Jodhpur Flies over London

THE Maharajah of Jodhpur and the Ranee made a "secret" flight lasting 30 minutes over London, on October 8, in one of the Imperial Airways D.H. machines. They arrived at Croydon Aerodrome in a closed car and, according to the custom of their country, in order that the Ranee should not be seen the pilot and inspector in attendance both turned away as the Ranee entered the machine, and similarly when she left it after the flight.

THE ROYAL AIR FORCE

London Gazette, October 13, 1925.

General Duties Branch

Flying Officer G. A. Hadley is granted a permanent commn. in rank stated (Sept. 26); J. C. H. Tavendale is granted a permanent commn. as a Pilot Officer, with effect from Sept. 12, and with seny. of Sept. 12, 1924. The following are granted short service commns. as Pilot Officers, on probation, with effect from and with seny. of the dates indicated:—J. L. Chadwick (Sept. 28); H. F. Gower (Sept. 30). The following Pilot Officers are promoted to the rank of Flying Officer:—W. C. Adams (Aug. 3); P. E. Nicholl (Oct. 14). Squadron-Leader H. A. Michell, O.B.E., is placed on the ret'd. list (Oct. 11); Flight Lt. E. S. Ades resigns his permanent commn. (Oct. 14). The following resign their short service commns.:—Flying Officer D. R. Dawson (Oct. 9); Pilot Officer W. T. Collins (Oct. 10). Flight Lt. V. A. Albrecht (Capt., Manch. Regt.), relinquishes his temp. commn. on being placed on the half-pay list (Army) on acct. of ill-health (Oct. 14). The short service commn. of

Pilot Officer, on probation, P. Clavell-Bloint is terminated on cessation of duty (Oct. 14). *Gazette* Sept. 29 concerning Flying Officer H. Macmillan is cancelled.

Medical Branch

Flying Officer W. J. Hutchinson, M.B., is transferred to the Reserve, Class D2 (Oct. 15).

Reserve of Air Force Officers

The following are granted commns., on probation, in Class A. General Duties Branch, in the ranks stated (Oct. 13):—*Flying Officers*.—D. Gardiner, S. Jones, W. M. Miller. *Pilot Officers*.—E. B. Fielden, C. Kenney, H. Rhodes, L. S. Webb.

Pilot Officer H. D. Morley is confirmed in rank (Sept. 21); Flight Lt. A. C. Ferguson relinquishes his commn. on acct. of ill-health and is permitted to retain his rank (Oct. 14).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander G. G. H. Cooke, D.S.C., A.F.C., to H.Q., Iraq, for Air Staff (armoured car) duties; 21.9.25.

Squadron Leaders: F. E. Hellyer, O.B.E., to R.A.F. Depot; 6.10.25. H. S. Powell, M.C., to R.A.F. Depot, on transfer to Home Estab.; 8.8.25. V. Greenwood, to H.Q., Iraq; 26.9.25. G. E. Godsave, to No. 4 Armoured Car Co., Iraq; 21.9.25.

Flight Lieutenants: C. B. Dalison, A.F.C., L. L. MacLean, M.C., F. A. Norton, L. M. Iles, A.F.C., and C. E. Maitland, D.F.C., to R.A.F. Depot; 6.10.25. H. V. Drew, A.F.C., to No. 24 Sqdn., Kenley, on transfer to Home Estab.; 23.10.25. T. O. Clogstoun, to Inland Area Aircraft Depot, Henlow; 6.10.25. W. Underhill, D.S.C., to H.Q., Iraq; 21.9.25. F. Beaumont, to No. 24 Sqdn., Kenley; 26.10.25. H. Bligh, to No. 1 Flying Training Sch., Netheravon; 26.10.25. A. P. Ritchie, A.F.C., to Inland Area Communication Flight, Northolt; 21.10.25. H. C. Black, to No. 5 Flying Training Sch., Sealand; 26.10.25. W. A. B. Buscarlet, to Central Flying Sch., Upavon; 26.10.25.

Flying Officers: L. Martin, to Flying Boat Development Flight, Felixstowe; 9.10.25. T. Marchant, to Reception Depot, West Drayton; 12.10.25. M. S. Keogh, A.M., to Aircraft Depot, India; 2.10.25. F. W. Foster, D.F.C., D.S.M., to No. 28 Sqdn., India; 2.10.25. (Hon. Flight-Lieut.) R. Stiven, to No. 60 Sqdn., India; 2.10.25. G. W. Birkinshaw, to R.A.F. Depot; 6.10.25. R. L. Palmer, to No. 1 Flying Training Sch., Netheravon; 12.10.25. G. V. T. Thomson, to R.A.F. Base, Gosport; 19.10.25. J. H. Slater, M.B.E., to Aircraft Depot, Iraq; 18.9.25. C. H. W. Boldero, to R.A.F. Depot, on transfer to Home Estab.; 1.10.25. F. Woolley, D.F.C., M. H. Aten, D.F.C., (Hon. Flight-Lieut.) A. W. Bates, and F. E. Watts, to No. 1 Flying Training Sch., Netheravon; 26.10.25. J. T. O'Brien-Saint, to R.A.F. Staff College, Andover; 16.10.25. H. J. Wykes and D. E. Godwin, to No. 2 Flying Train-

ing Sch., Digby; 26.10.25. J. C. Hill and V. Harris, to Central Flying Sch., Upavon; 26.10.25. R. V. Eccles, to No. 111 Sqdn., Duxford; 26.10.25.

Pilot Officers: G. D. Green, to No. 5 Sqdn., India; 2.10.25. L. Dalton-Morris, G. D. Harvey, and R. J. Stevens, to No. 7 Sqdn., Bircham Newton; 12.10.25. J. A. C. Florence, A. H. Frost, and J. S. Georgeson, to No. 9 Sqdn., Maiston; 12.10.25. M. Brunton, I. G. E. Dale, A. R. Dunlop, and V. C. Taylor, to No. 41 Sqdn., Northolt; 28.9.25. W. J. Kelly, R. Matheson, and H. A. M. Weir, to No. 12 Sqdn., Andover; 28.9.25. T. H. Rowlands, to No. 99 Sqdn., Bircham Newton; 28.9.25. F. Priestman, to No. 11 Sqdn., Netheravon, on appointment to a permanent commn. from Cadet College; 30.9.25. R. L. R. Atcherley, to No. 23 Sqdn., Henlow; 26.10.25.

Stores Branch

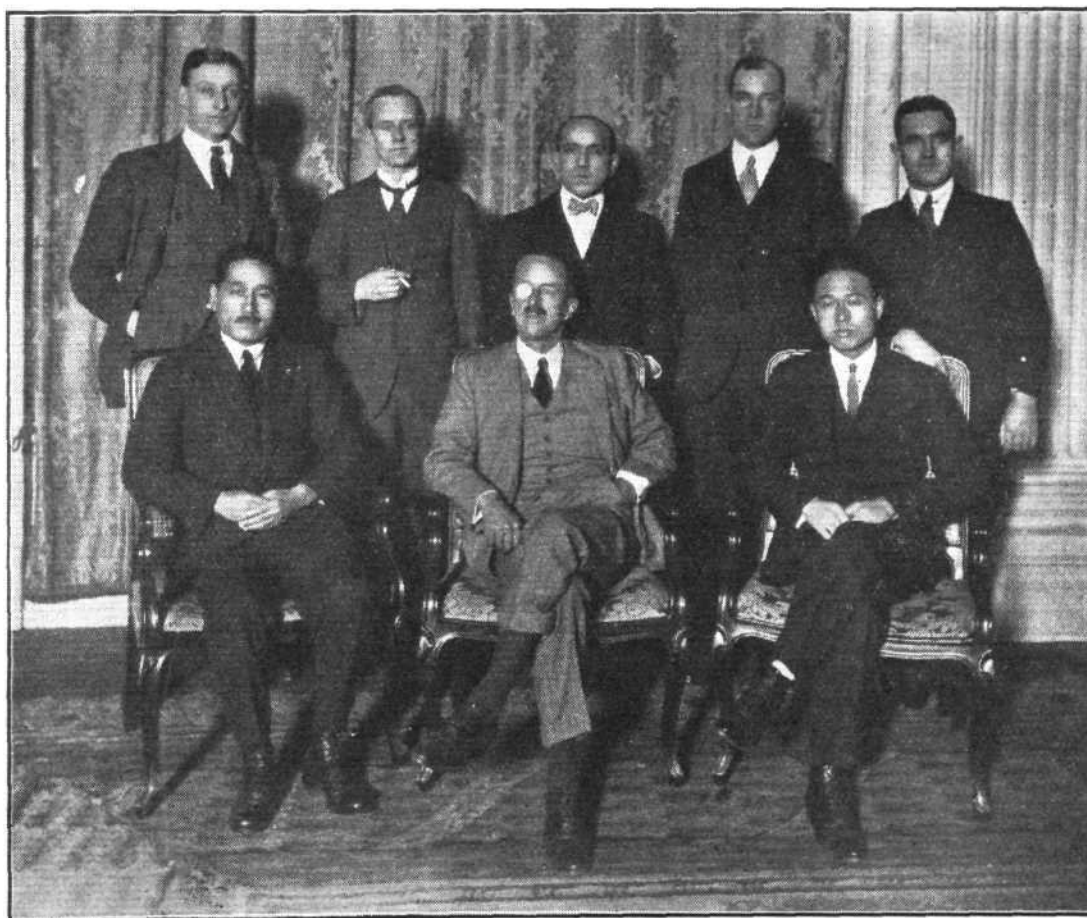
Flying Officers: H. C. Haywood-Gibbons, to No. 4 Stores Depot, Ruislip; 19.10.25. R. D. Lambert, to R.A.F. Depot; 22.9.25. L. N. Sargent, to R.A.F. Depot; 13.10.25. E. G. Keeping, to No. 1 Stores Depot, Kidbrooke; 19.10.25. W. B. Francis, to H.Q. Spec. Res. and Auxiliary Air Force; 19.10.25. H. C. Haywood-Gibbons, to Record Office, Ruislip, instead of to No. 4 Stores Depot as previously notified; 19.10.25.

Medical Branch

Flying Officers: A. F. Cook, to R.A.F. Hospital, Cranwell; 9.10.25. H. J. Henderson (Dental), to R.A.F. Depot; 30.9.25.

NAVAL APPOINTMENTS

The following appointments were made by the Admiralty on October 19:—*Lieuts., R.N. (Flying Officers, R.A.F.)*: S. T. Morgan, to Argus and for No. 423, Flight, for flying duties on completion of final deck landing training (October 7), and G. F. N. Bradford, to Furious and for No. 420 Flight, supy., for final deck landing training (October 13).



Tokyo-London Flight: In this group, photographed at a luncheon given last week by Vickers, Ltd., to the Japanese aviators to celebrate their arrival in London, are a unique number of long-distance fliers. Standing, from left to right: Capt. S. Cockerell (London-Tabora), Sir A. Whitten-Brown (Newfoundland-Ireland), Major D. Aracena (Santiago-Rio de Janeiro), Sq. Leader Sir C. J. Q. Brand (Cairo-Cape) and Flight-Lieut. N. Plenderleith (England to Behring Sea). Seated: Major Abe (London-Tokyo), Air Vice-Marshal Sir W. Sefton Brancker (London-Rangoon-London), and Mr. Kawachi, (Tokyo-London).

SOCIETY OF MODEL AERONAUTICAL ENGINEERS (London Aero-Models Association)

THE last outing of the members took place at Hendon, when hydro-aeroplane trials were made on the Welsh Harp under rather adverse conditions. Five machines put in an appearance—Mr. D. A. Pavely's 4½ lb. compressed-air model and Mr. R. N. Bullock's rubber-driven fuselage seaplane (two floats only) being particularly fine pieces of work. Mr. B. K. Johnson's spar tractor put up many good flights from the water during the afternoon, as did also Mr. S. C. Hersom's "Twin Pusher." Both Mr. Pavely and Mr. Bullock got their machines to leave the water, but the somewhat gusty wind repeatedly caused a wing-tip to touch the water after the floats had got clear, with the resulting inevitable "splash." Consequently, no prolonged flights were obtained with these two last-mentioned machines. Nevertheless, given a fair day, they should undoubtedly put up a good performance.

On Tuesday evening, October 27, the first indoor meeting will be held at Headquarters, Y.M.C.A., Tottenham Court Road, W. 1, when a general discussion will take place on the results of the competitions, records, etc., of the past year. It is to be hoped that all members will make a special effort to be present on this occasion, so that the Research Committee may benefit by any suggestions for the coming year.

Will all members who are entering the Photographic Competition be sure and send in photographs to Mr. B. K. Johnson not later than November 1.

A. E. JONES, *Hon. Sec.*

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R.33 as Aircraft Carrier

THE R.33 airship made a short test flight on October 9 in the neighbourhood of Pulham. Several successful technical tests were carried out, including a photographic record of the motions of the ship taken from the ground.

On October 15 she was out again and made an interesting, but by no means new, experiment at Pulham, when an aeroplane was successfully launched from the airship and afterwards, though not quite so successfully, the aeroplane re-attached itself to the airship. Under ideal weather conditions, the R.33, with a D.H.53 light aeroplane suspended on a sort of trapeze gear beneath the airship's keel, left the mooring-mast and proceeded to climb to an altitude of about 5,000 ft. Squadron-Leader Rollo Haig then climbed into the pilot's cockpit and released the machine, diving earthwards until his engine got going. He then returned to the airship for the purpose of "hooking" on. As he manoeuvred the 'plane on to the clip, which secured the machine on the "trapeze," the airscrew came into contact with some wires and broke. The machine made fast successfully, however, and shortly after the pilot "let go" once again and glided down to the aerodrome, the R.33 also descending and mooring later to the mast.

Large Airship Shed for Karachi

THE Air Ministry have given a contract to the Armstrong Construction Co., Ltd. (which is associated with Sir W. G. Armstrong, Whitworth and Co., Ltd.), for the construction of an airship shed at Karachi—for use in connection with the proposed airship service to India. This shed will be 850 ft. long, 180 ft. wide and 170 ft. high.

"Bristol" Success in America

IN the light 'plane section of the New York Air Meeting, the Powell Racer, a light 'plane designed and built by Professor C. H. Powell, of Detroit University, won the speed and efficiency race, and in fact, secured every first prize in the competition, including the Aero Digest Cup. The Powell machine is a very small affair, having a span of only 15 ft. 6 in. and weighing but 310 lb. The speed established was 76.4 m.p.h. The Powell Racer is fitted with a Bristol "Cherub" engine, and the success of this British engine has been widely noted and commented upon.

Company Doings

A PETITION for the winding-up of Northern Air Lines, Ltd., has been presented by Sydney Charles Harrison and The Engineering Equipment Company, both of Sentinel House, Southampton Row, and is to be heard in London on October 27.

Junkers for South African Air Mail Service

IT is reported that an arrangement has been made with a company to operate an air mail service in the Union early next year, the machines to be used being all-metal Junkers monoplanes.

The Royal Air Force Memorial Fund

THE usual meeting of the Grants Sub-Committee of the fund was held at Iddesleigh House on October 15. Lieut.-Comdr. H. E. Perrin was in the chair, and the other members of the committee present were Mr. Walter S. Field, Mrs. L. M. K. Pratt-Barlow, O.B.E.

The committee considered in all 17 cases, and made grants to the amount of £54 1s.

The next meeting was fixed for October 29, at 2.30 p.m.

Imperial College of Science and Technology Awards

THE Air Ministry announces that the following officer, who was selected for the Aeronautical Research Course "C" at the Imperial College of Science and Technology in October, 1922, has presented a thesis to the Board of Studies of the College and has been awarded the Diploma of the Imperial College for advanced study and research: Flying Officer C. J. Sims, D.F.C.

Air Ministry Golfing Society

THE final tie in the Air Ministry Golfing Society's knock-out competition for the Stevenson Cup was played over 36 holes at Berkhamsted on October 11, and was won by the Royal Air Force champion, Squadron Leader C. H. Hayward (plus 3), who beat I. V. H. Campbell (7) by 3 and 1.

Fatal Accident on Cross-Channel Air Line

Fog was the cause of an unfortunate accident to one of the French Air Union "Goliaths" on October 16 whilst on the trip from Paris to London, as a result of which one of the passengers, Miss K. G. Burke, was killed and two others were injured. The machine ran into a fog bank near Wadhurst, and the pilot, when attempting to land, collided with a tree and crashed to the ground.

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PUBLICATIONS RECEIVED

By Airplane towards the North Pole. By Walter Mittelholzer and others. George Allen and Unwin, Ltd., Ruskin House, 40, Museum Street, London, W.C. 1. Price 10s. 6d. net.

The Accessory. Vol. II. No. 120. October, 1925. Brown Brothers, Ltd., Great Eastern Street, London, E.C. 2.

Catalogue

Petro-Flex. Hobdell, Way and Co., Ltd., 45, Church Street, Minories, London, E. 1.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924.

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| 15,107. | H. LEITNER. | Screw propellers. (240,215.) |
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| 24,015. | G. MILLER. | Aeronautical machines. (240,301.) |
| 25,524. | BOULTON AND PAUL, LTD., and J. D. NORTH. | Girders for aircraft construction. (240,309.) |
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